

Developing an Eco-social Enterprise

Session 1

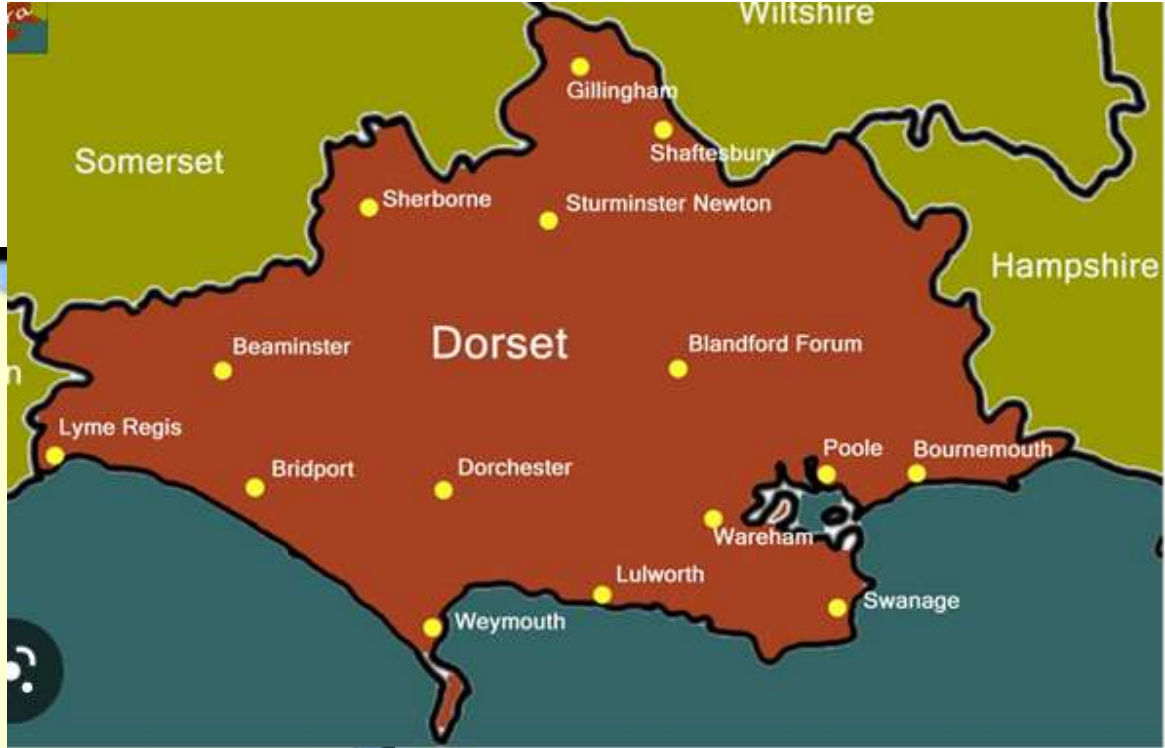
Monday 24 April, 2023

Tim Crabtree

Wessex Community Assets & Plymouth University

Outline of the course

- What are our concerns?
- How might we address our concerns through developing an eco-social enterprise?
- Working in groups on a business idea
- Systems thinking
- Developing a theory of change
- Developing a business canvas
- Group presentation on Friday = the evaluation



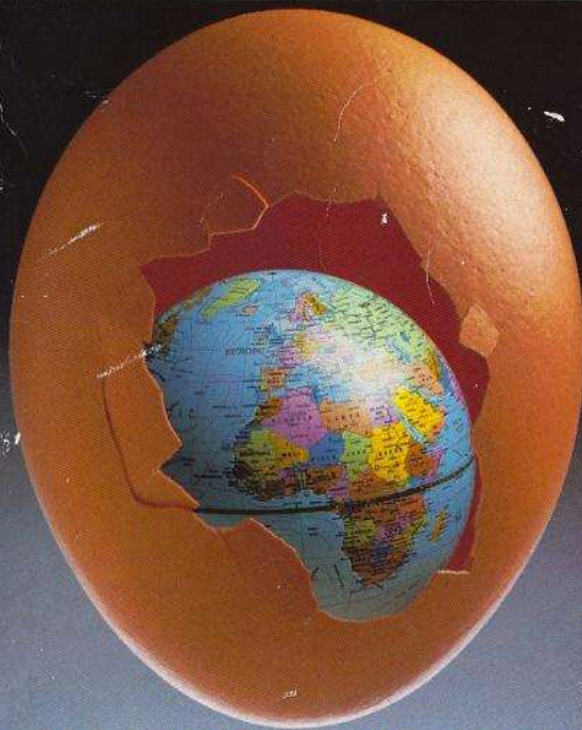


ABACUS

E. F.

SCHUMACHER

SMALL IS BEAUTIFUL



A STUDY OF ECONOMICS AS IF
PEOPLE MATTERED

MONDRAGON



**HUMANITY
AT WORK**

Finance
Industry
Retail
Knowledge



ENPRESAGINTZA
FAKULTATEA
FACULTAD DE
EMPRESARIALES





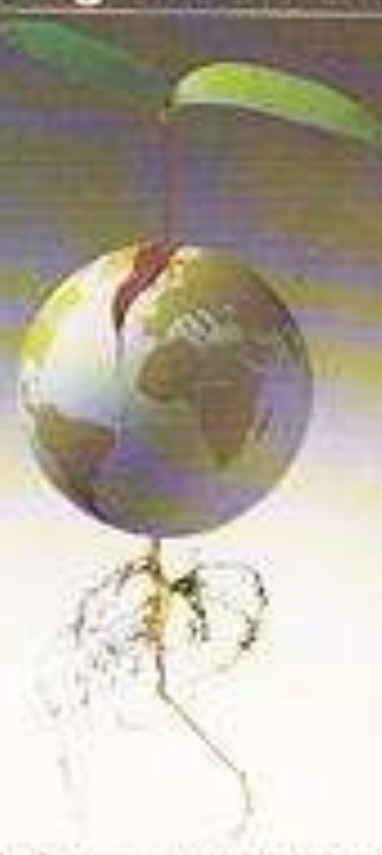
n e f

economics as if people
and the planet mattered

ABACUS

SMALL IS POSSIBLE

George McRobie



The sequel to E.F. Schumacher's **SMALL IS BEAUTIFUL**
and **A GUIDE FOR THE PERPLEXED**

development
dialogue

Reprint from 1998-1



HUMAN SCALE DEVELOPMENT

An Option for the Future

CEPAUR
Dan Hammarøft's Foundation

REAL-LIFE ECONOMICS

Understanding the World's Economy



Edited by Paul Ekins
and Manfred Max-Neef



Das Humboldt'sche Institut
für Kulturwissenschaften

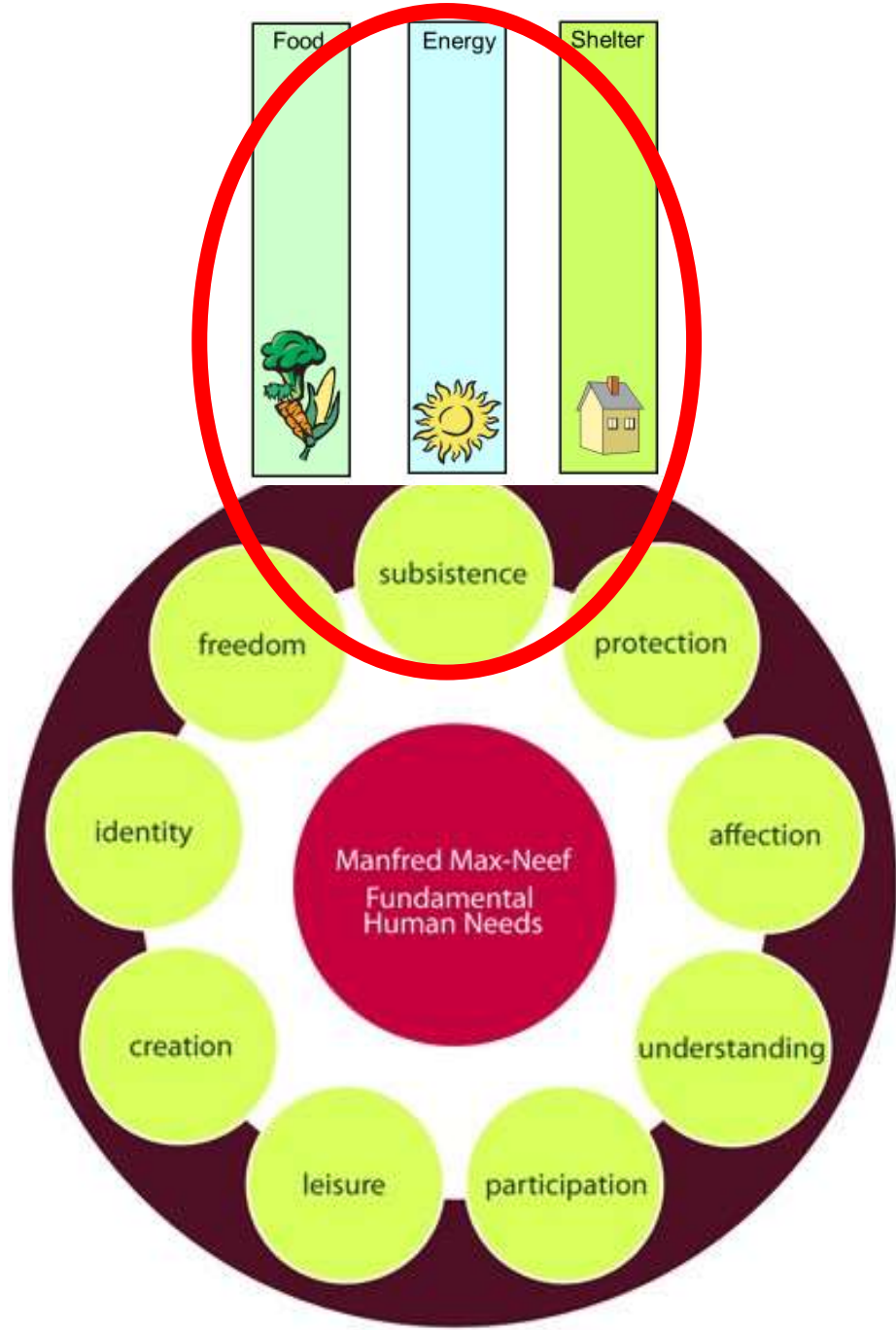
What Next?

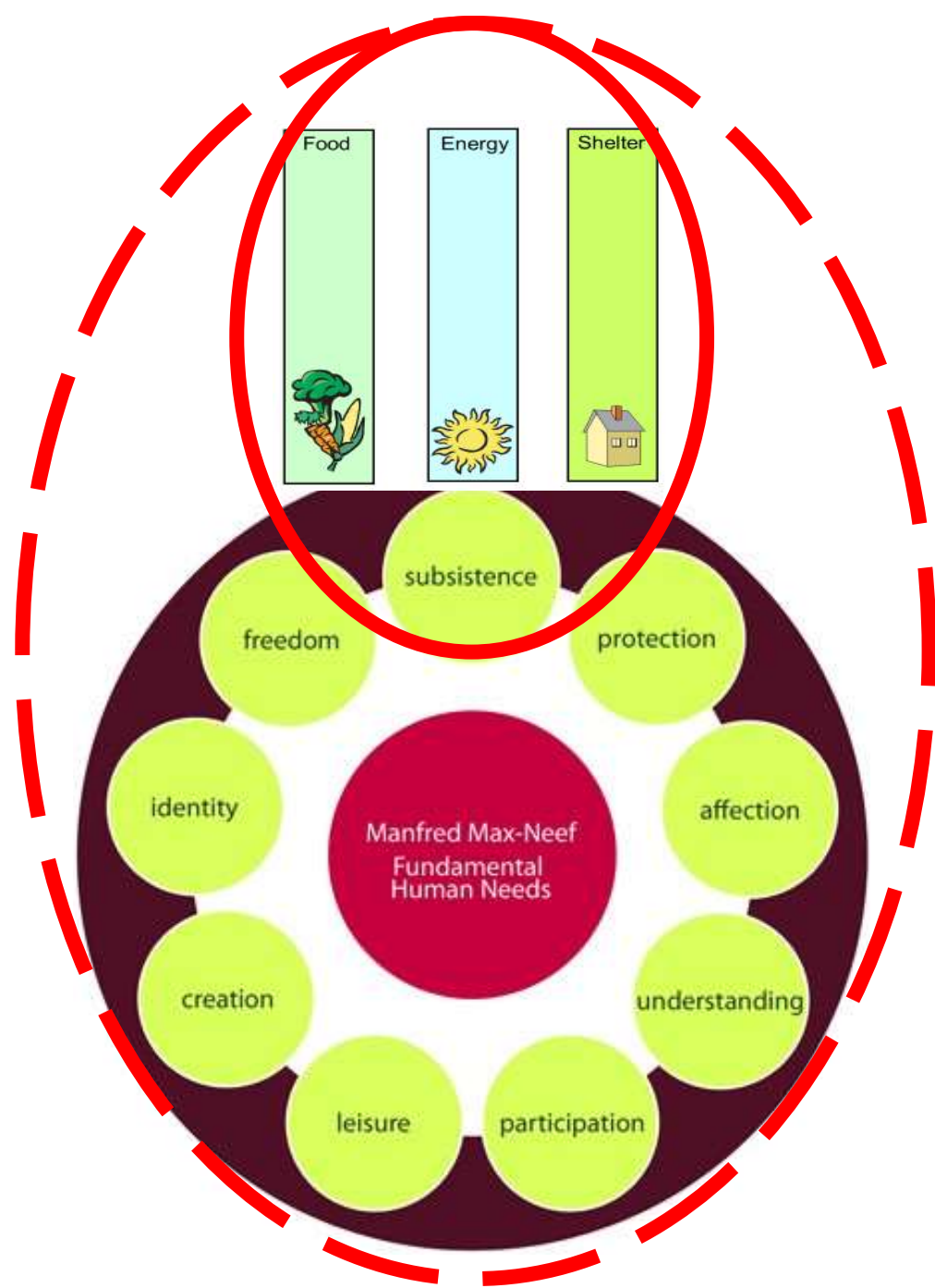
Draft thematic paper

From Knowledge to Understanding: Navigations and
Returns

Manfred A. Max-Neef







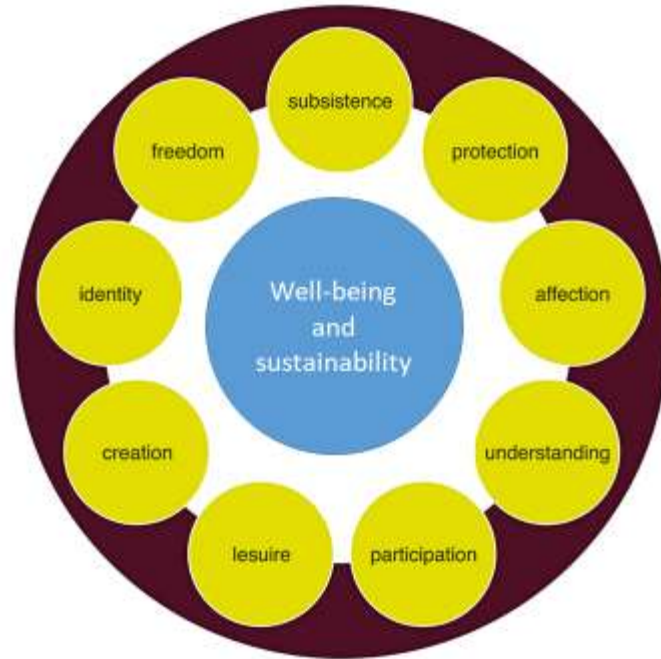
Food

Energy

Transport

Housing

Communication

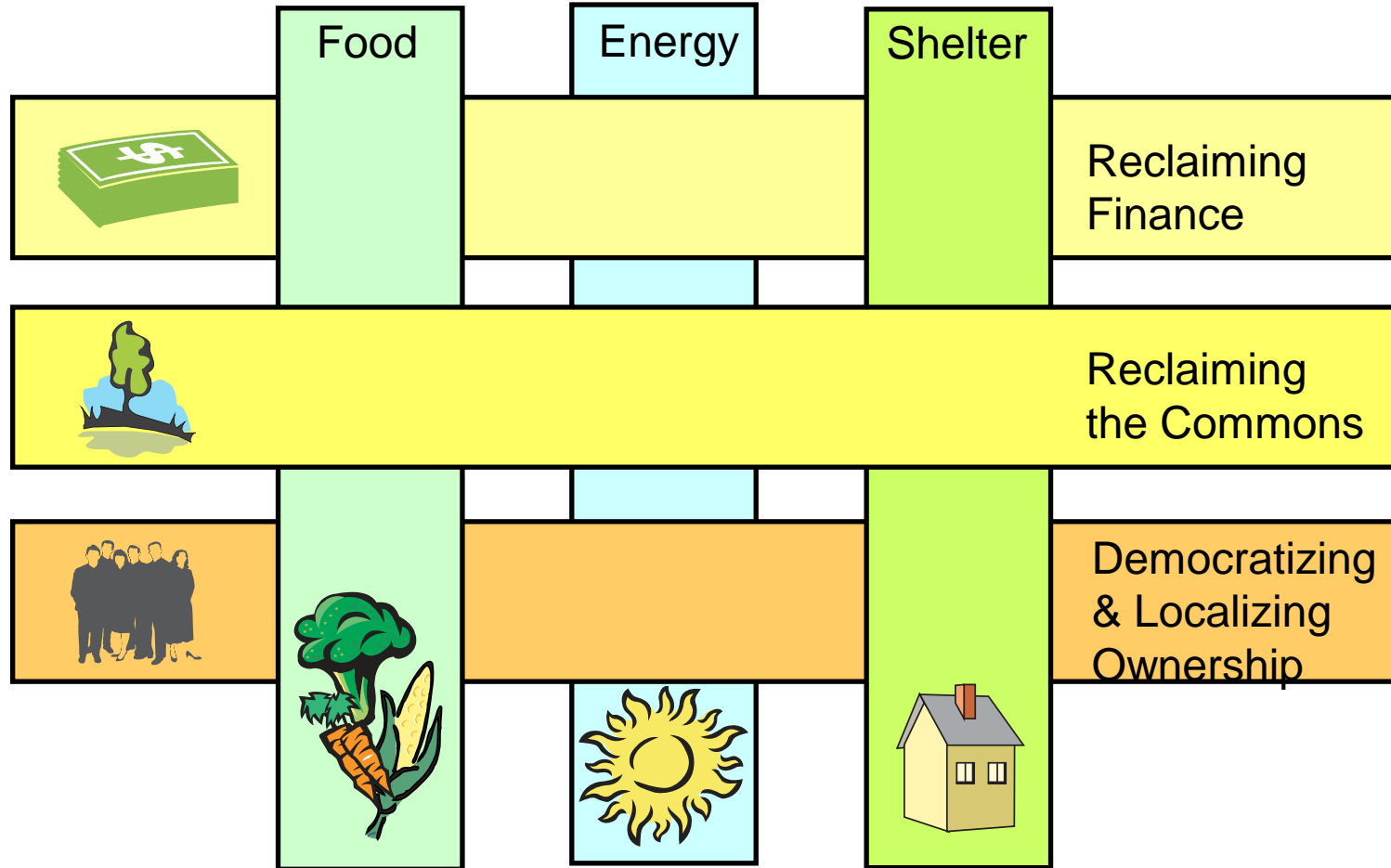


Culture

**Social care
& health**

Education

SATISFIERS



ENABLERS

Question

- Name an eco-social enterprise that you are aware of and like for some reason?
- What is interesting about that enterprise?

Wessex Community Assets: 2003 – 2023

Supporting 50 communities across Devon, Dorset & Somerset



Wessex Community Assets: 20 years of innovation

- Pioneered the use of community shares.
- Supported over 100 eco-social enterprises.
- Developed one of the UK's largest enabling services for community-led housing.



Support for Community Housing since 2001

- Working in Devon, Dorset and Somerset
- 25 projects completed – over 250 houses; 25 projects in progress







Small number of projects with focus on sustainability



Christow CLT and Teign Housing completed 18 Passivhaus affordable homes in the Dartmoor National Park

wessexca.co.uk

The challenge:

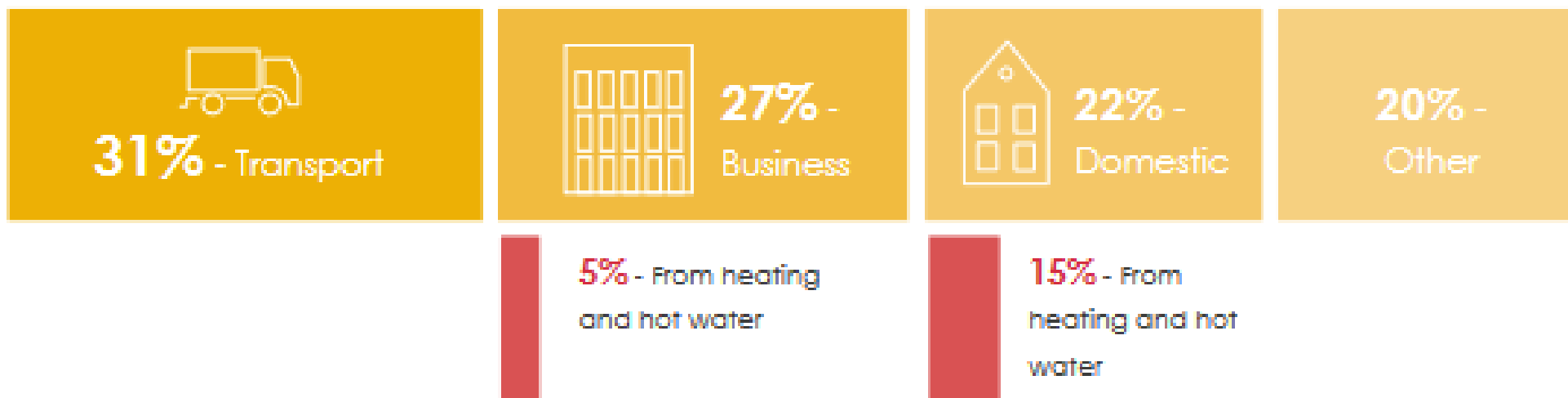
We need the majority of new houses to be affordable and sustainable....

And we need to transform the existing housing stock.

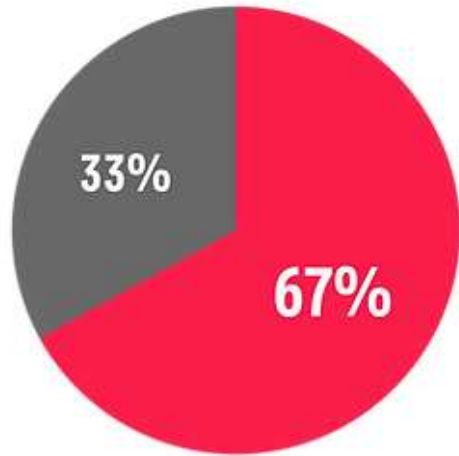
Question:

What are the problems with the way we build houses?

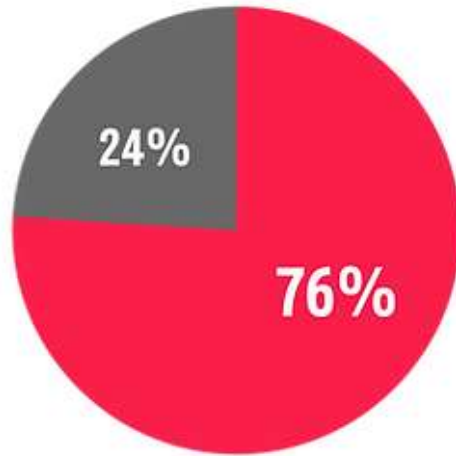
Total UK greenhouse gas emissions



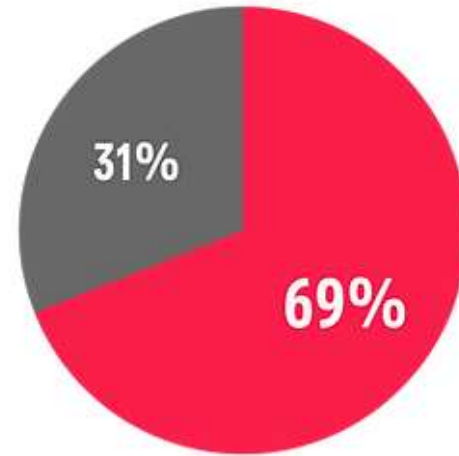
OFFICE



WAREHOUSE



RESIDENTIAL

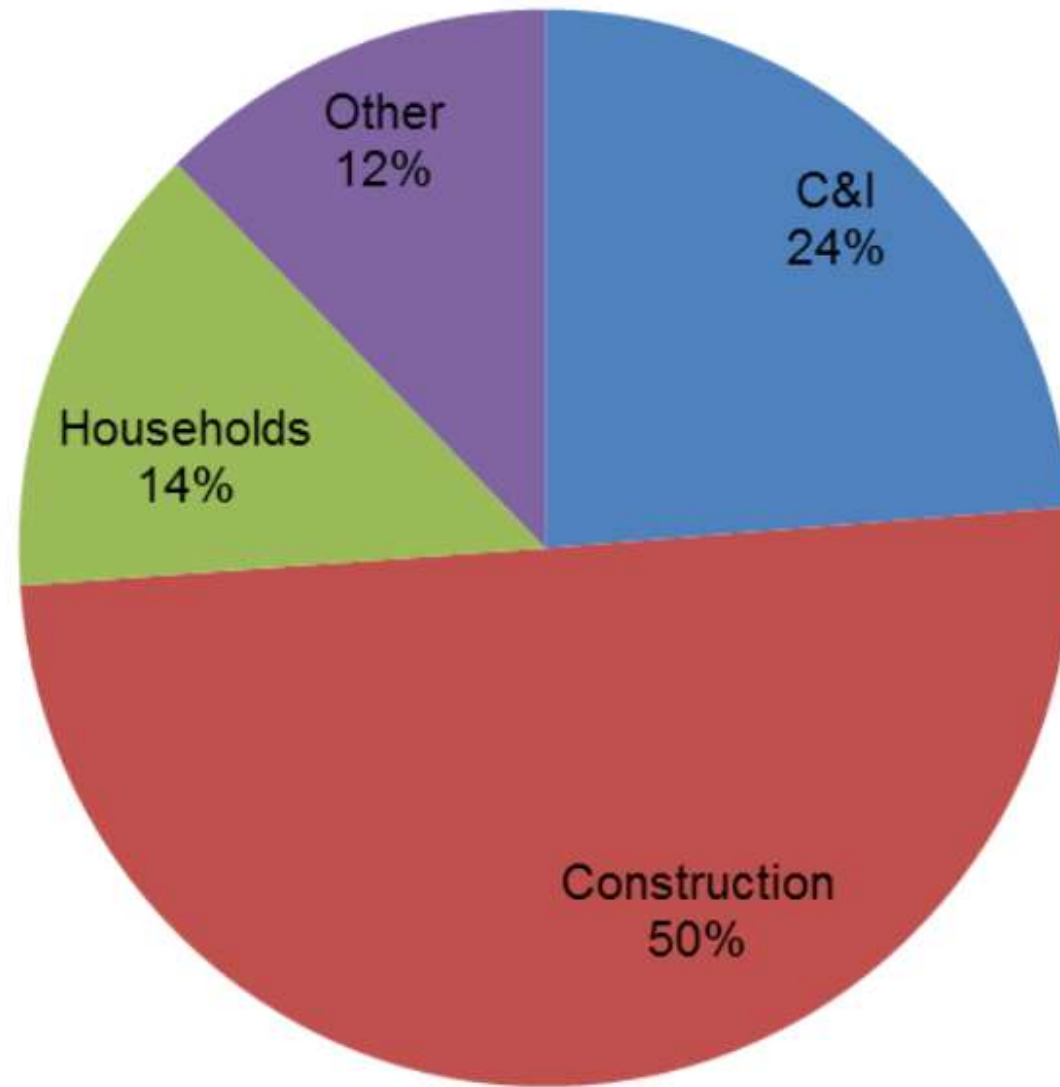


Operational Carbon Emissions



Embodied Carbon Emissions

Diagrams: Sturgis Carbon Profiling/ RICS.



Source: Waste Statistics Regulation return



Bridport Community-led Economic Development

Local Materials in Construction

Tim Crabtree

2017

**Timber & other
local materials
as key inputs**



**Affordable,
sustainable
houses**



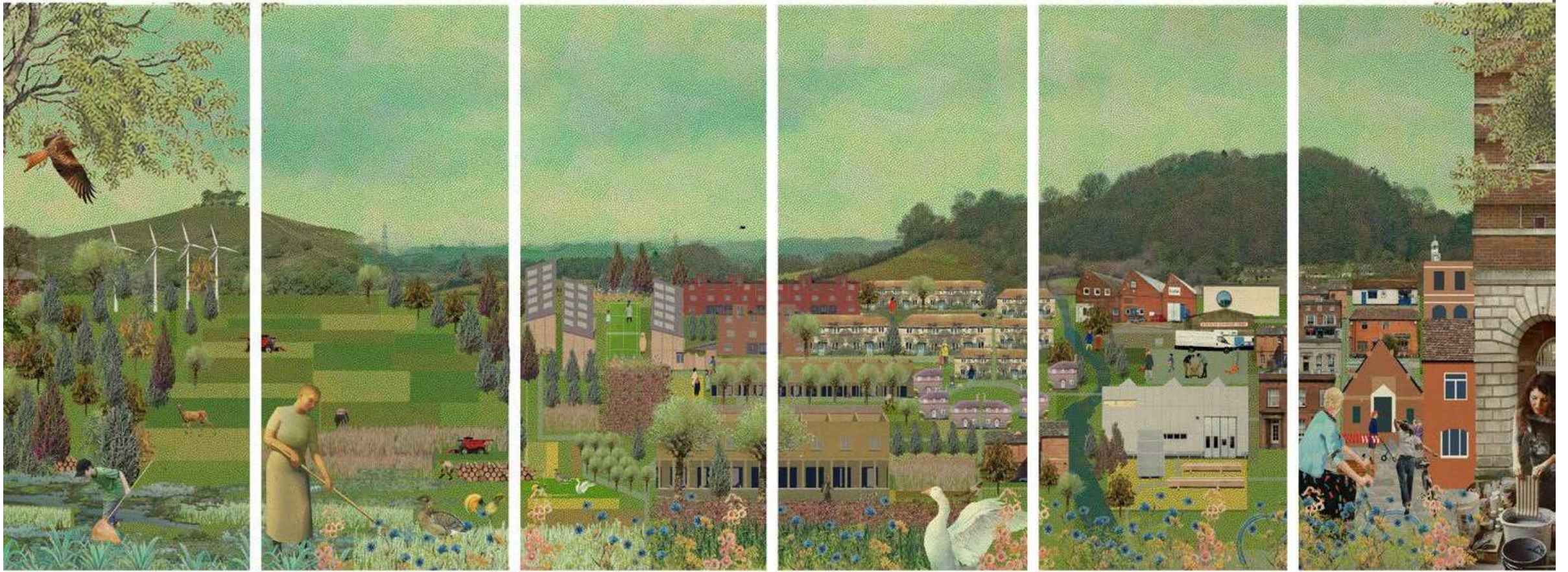
Potential local building materials

Raw material	Product	Possible sources
Stone	Stone facing	Existing small quarries
Boulders	Saddle stones	Local farms
Lime	Lime putty	Small scale clamp burning
Slate	External floor slabs	Several local quarries
Cobbles	External floors and paths	Local rivers, streams.
Gravel	For back-fill and bedding	Local quarries
Sand	For mortars, renders and plasters	Local quarries and rivers, seashore, streams
Subsoil for cob	Cob for mass walling	Local farms
Clay for plasters	Base coat plasters, clay slips and clay/straw infill panels	Extensive clay beds in the local area. Also available as processed dry clay in bags
Clay for pigments	Natural clay and lime based paints	Extensive in the local area
Naturally durable timber	Rafters, beams, joists and cladding and roof shingles	Oak, Sweet Chestnut, larch, Douglas Fir, Western Red Cedar
Non durable timber	Studwork and internal boarding and joinery	Spruce, Scots pine, Ash, Willow, as well as the above
External Joinery grade timber	Windows and Doors	Oak, Sweet Chestnut, European Larch
Floor boards	Heavy use	Oak, Sweet Chestnut, Ash
Straw bales	Straw bale walls and staw/clay slip infill	Local arable farmers
Agricultural hemp	Cast lime/hemp shiv infill	Local arable farmers
Sheeps wool	Loose insulation	Local Farmers
Thatching reed	Roofing	Sourced from local wetlands

Net zero and sustainable construction



<https://www.materialepyramiden.dk/>



**WESSEX
COMMUNITY
ASSETS**

Raise the Roof

The Raise the Roof project addresses three inter-locking concerns:

- The **crisis in the housing sector**, characterised by lack of affordability, lack of sustainability and lack of security.
- The **crisis of livelihoods** in smaller towns, characterised by low average wages and job insecurity, lack of access to skills training, and lack of support and resources to support the start up or expansion of local enterprises.
- The **ecological crisis**, encompassing climate change, biodiversity loss and poor management of the natural environment, including agricultural land and woodlands, combined with pollution and resource depletion.

The Raise the Project seeks to answer these questions:

- Can we build or refurbish housing in such a way that we help maintain and create jobs within a resilient local economy?
- Can we imagine new and creative designs and construction methods for the houses we want to (re-)build – and ensure they are affordable?
- Can we draw on sustainable materials that flow out of regenerative forestry and agriculture?



FUNDED BY:



UNIVERSITY OF PLYMOUTH



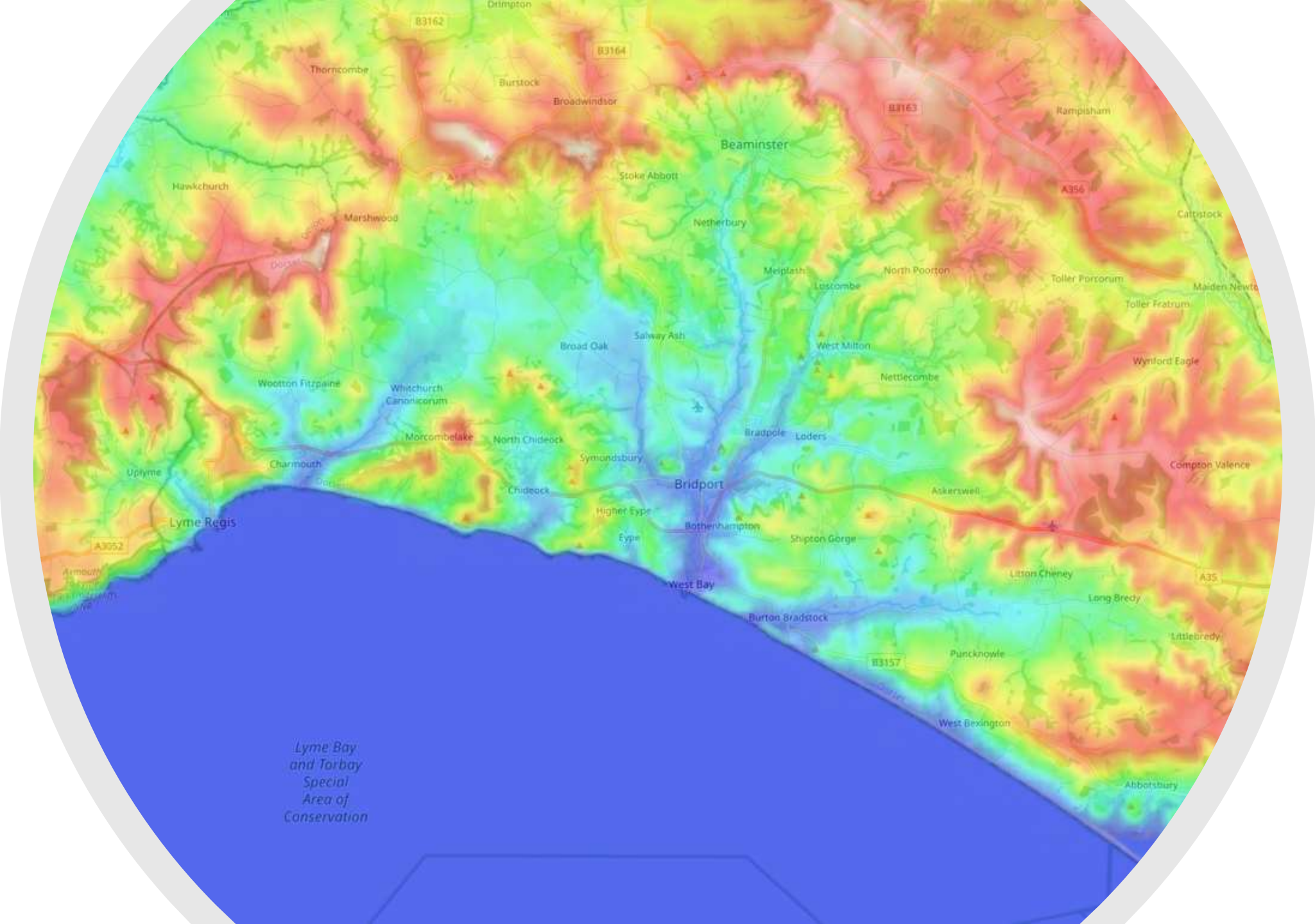
ASSEMBLE



COMMON GROUND

Fair economy. Better world.





*Lyme Bay
and Torbay
Special
Area of
Conservation*



Wood Chip Barn | Design + Make

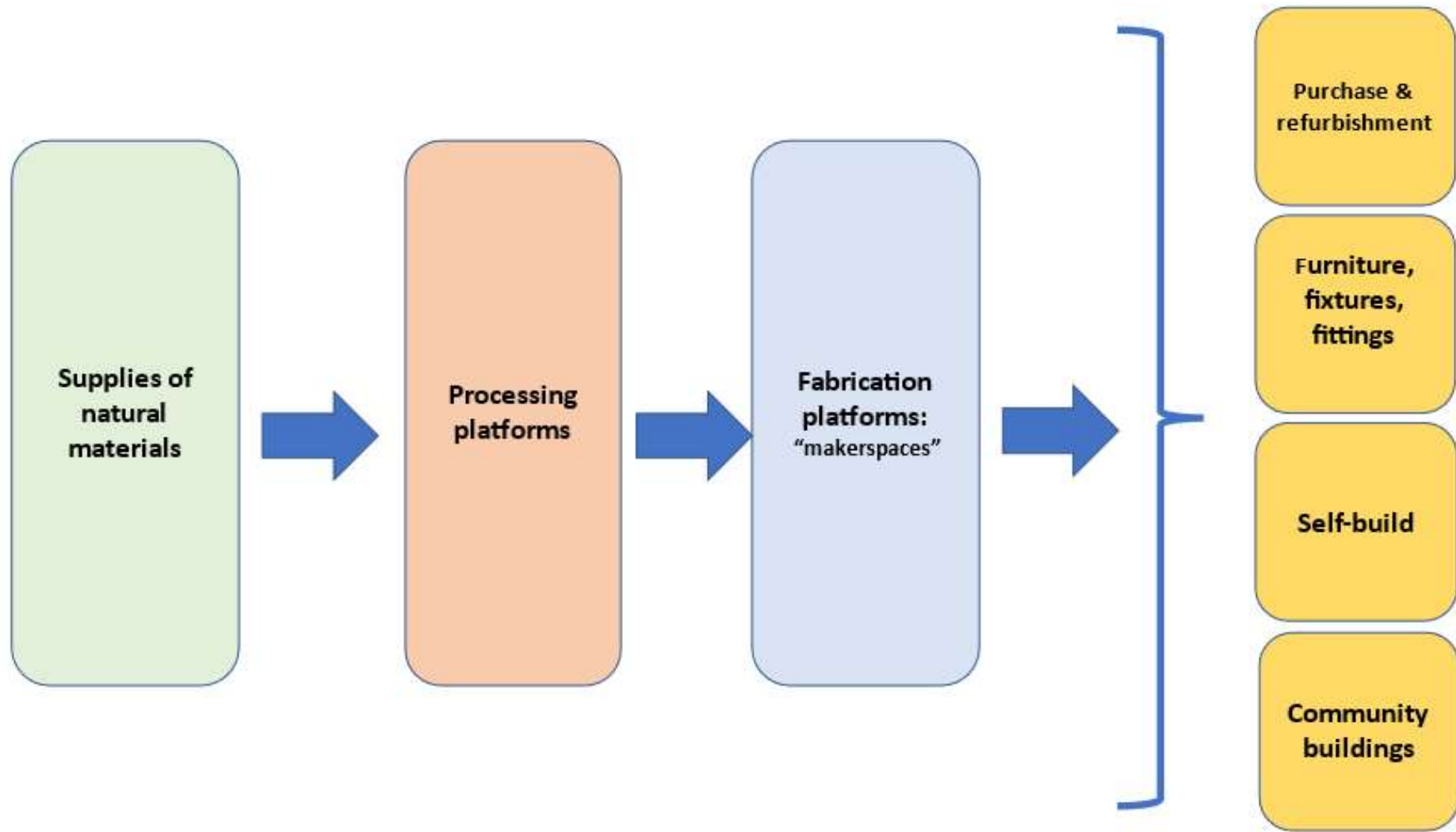
6 years ago | More



Hooke Park

+ Follow

<https://vimeo.com/157159413>





Tiny House Building Course - 26-30 July and 23-27 Aug



Connected Everything (EPSRC programme): Development of models & prototypes with Plymouth University's Digital Fabrication Lab

UNIVERSITY OF PLYMOUTH
 Alejandro Veliz Reyes (Digital Design & Fabrication)
 Pieter De Wilde (Building Performance Analysis)

ADVISORY PANEL
 Tim Crabtree, Wessex Community Assets
 Mollie Claypool, Automated Architecture Ltd



Computing Craft 2019-20



SWCTN Automation Fellowship 2019-20



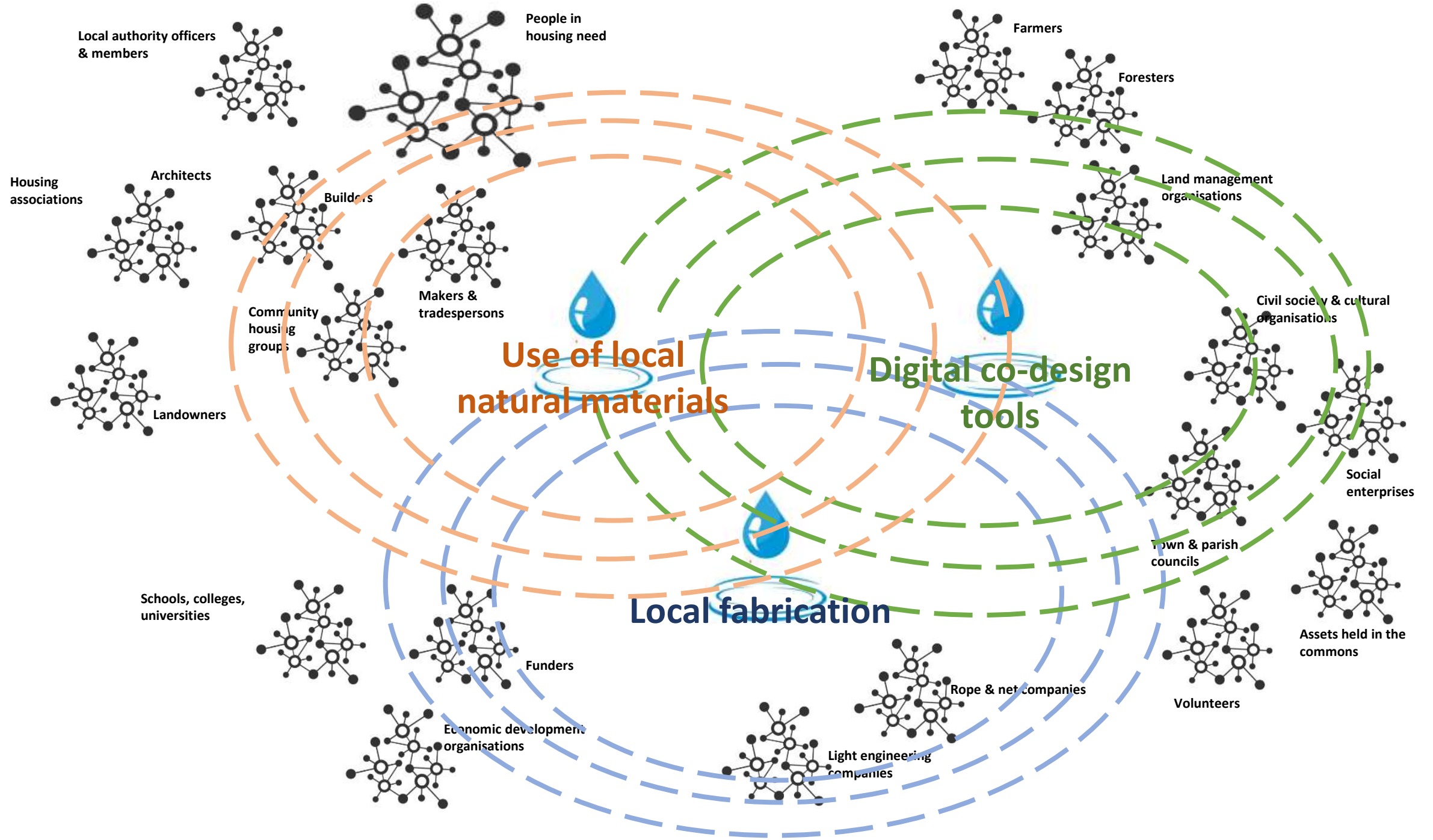
UBB Chile, 2019



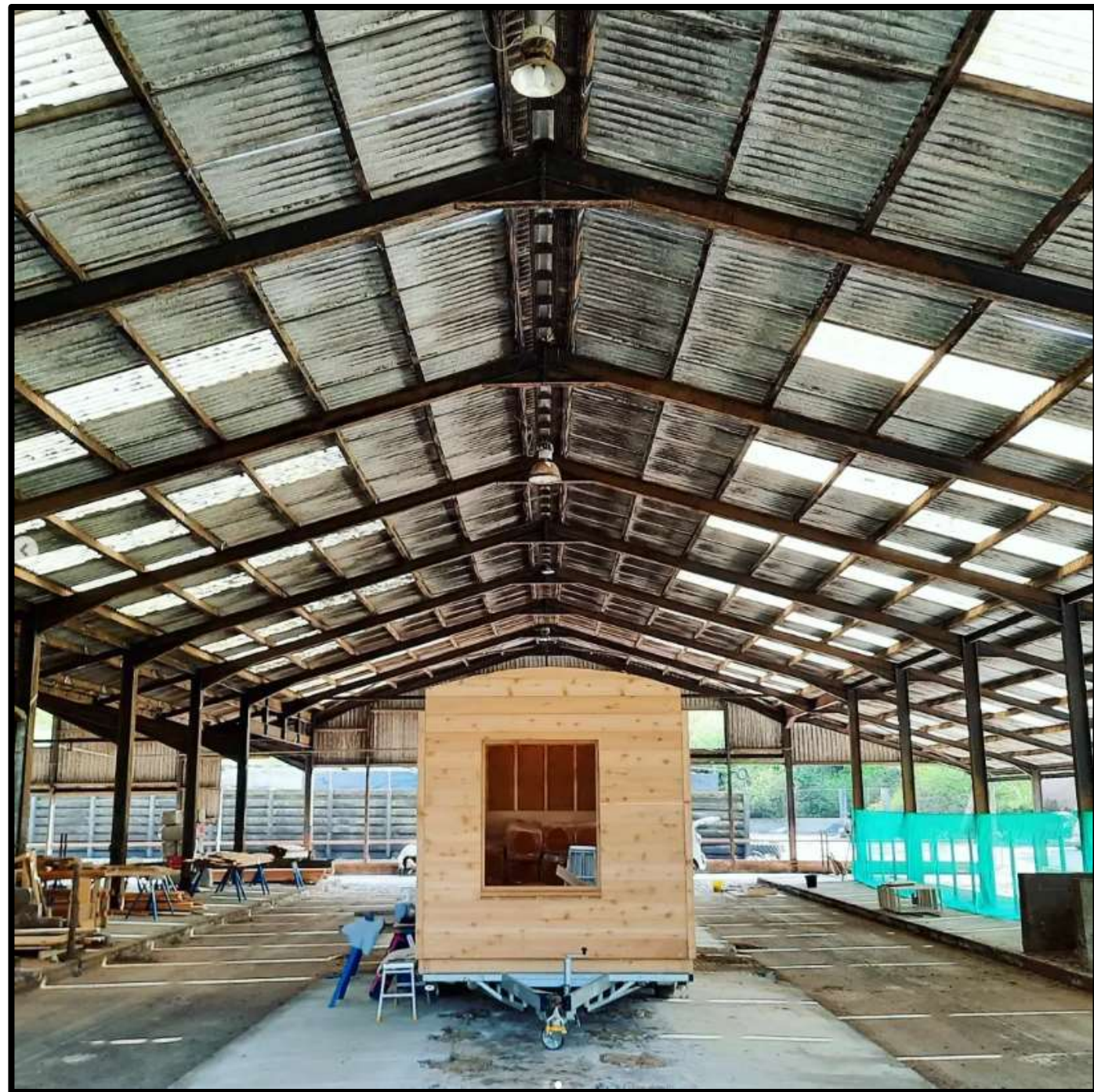
AIAR 2020



AIAR 2020



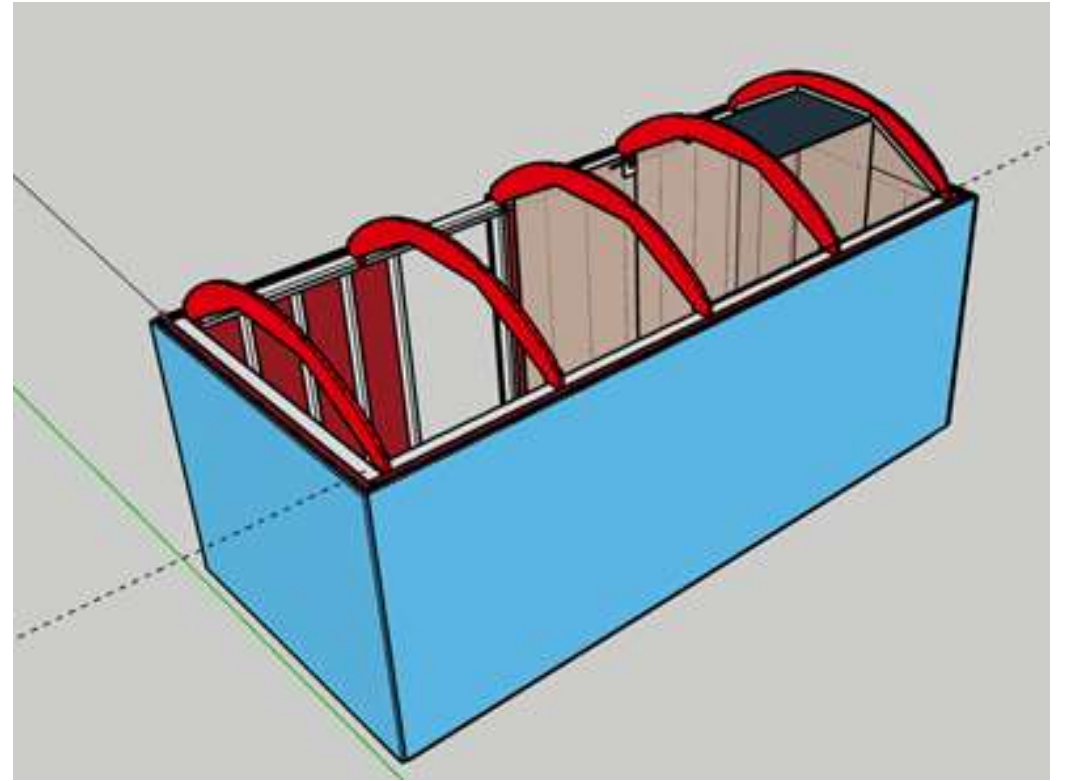
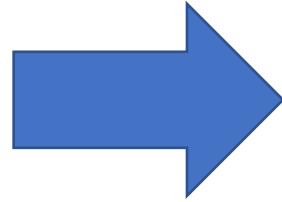
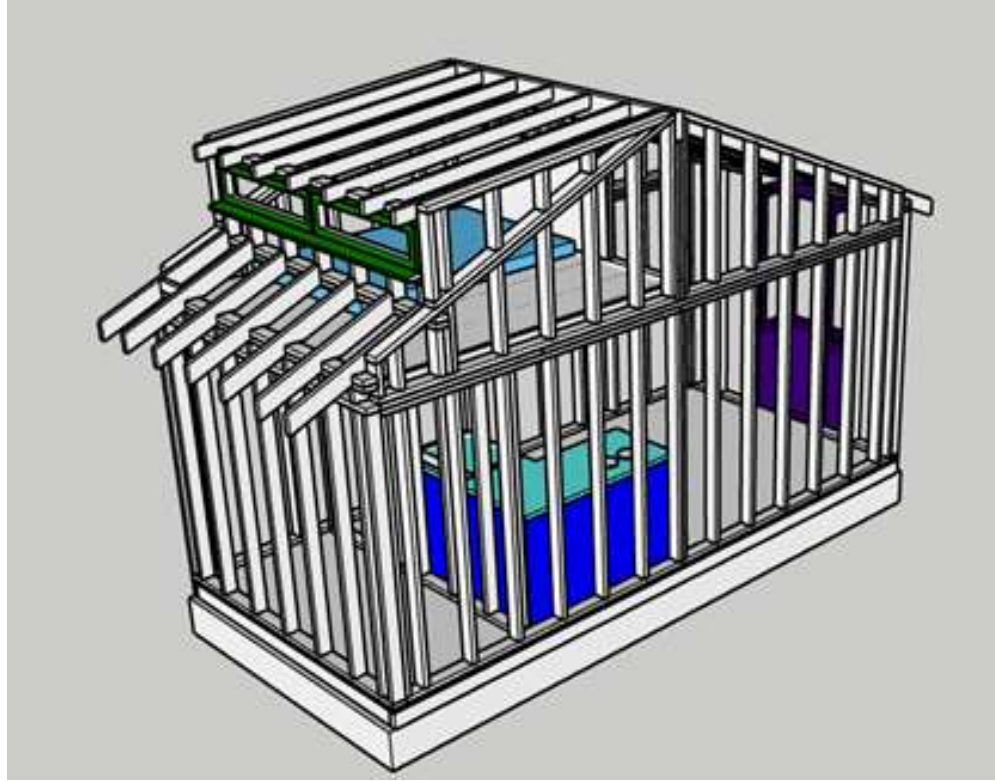
Prototyping 1

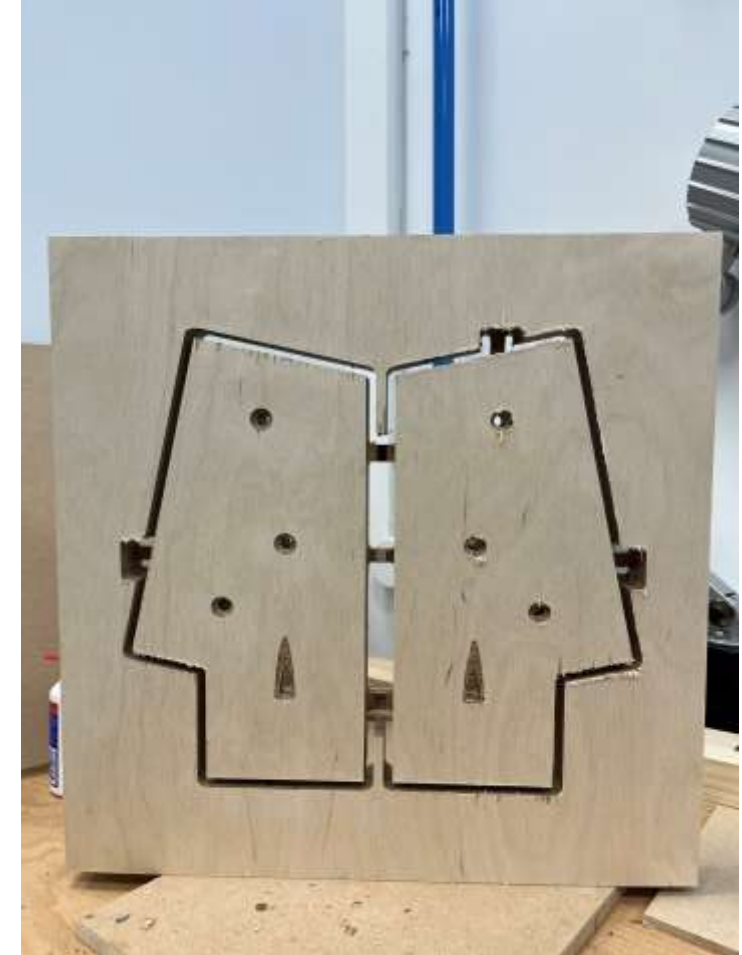


Tiny House

High (Social) Value Manufacturing











Prototyping 2

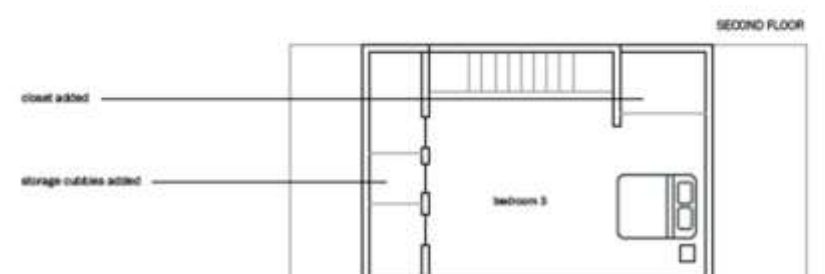
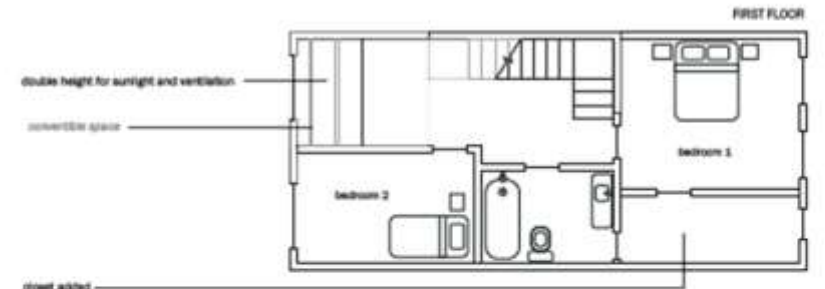
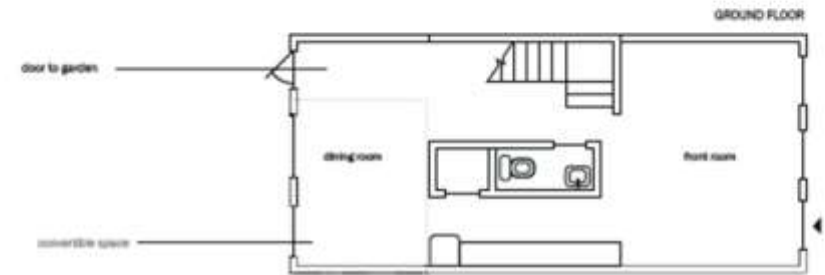
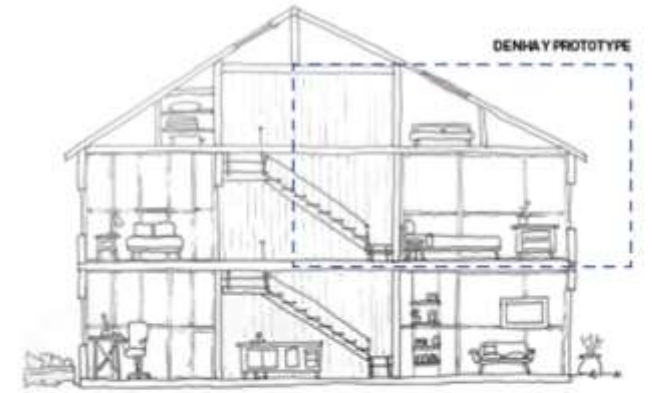
1:1 Housing system prototyping





**TYPE 1:
ROW HOUSE - BASIC**

This layout provides the fastest route to a finished, mortgageable shell. Minimum partitions need to be added initially aside from toilets and optionally bedrooms. This offers the greatest flexibility for the home owners to decide spatial configuration throughout time.







Material approach

(Co)design and prototyping through digital fabrication



*Prototype panel, University of Plymouth Digital Fabrication Laboratory.
Image source: A. Carr, 2022..*

Material approach

(Co)design and prototyping through digital fabrication



Material approach

(Co)design and prototyping through digital fabrication



Quelques produits issus du chanvre



Alimentation



Charpente Traditionnelle
 + Entre chevrons
 + Sous rampants
 + dérivé au sol



Bâtiment



Automobile

Bénéfices :

- Allègement de 20% du poids des pièces
- Les fibres sont renouvelables
- En fin de vie, les plastiques en chanvre sont recyclables

biofib
 chanvre

Traditionnel 100% chanvre
 $\lambda = 0,040 \text{ W/m.K}$
 (Stat. Technique EU)
 Ep 200mm : R = 5 m²/K/W



Confort acoustique renforcé
 $\lambda = 0,040 \text{ W/m.K}$
 Essais FCBA : jusqu'à Rtr = 69 dB



MOB

ITE

Cloisons distributives & séparatives

Murs & plancher
 La solution acoustique

Mur maçonné

L'isolation végétale économique

Béton de chanvre

Chêne-vitex caillé

Enduits chaux/chanvre



Jardin



Litière



Divers



Cosmétique







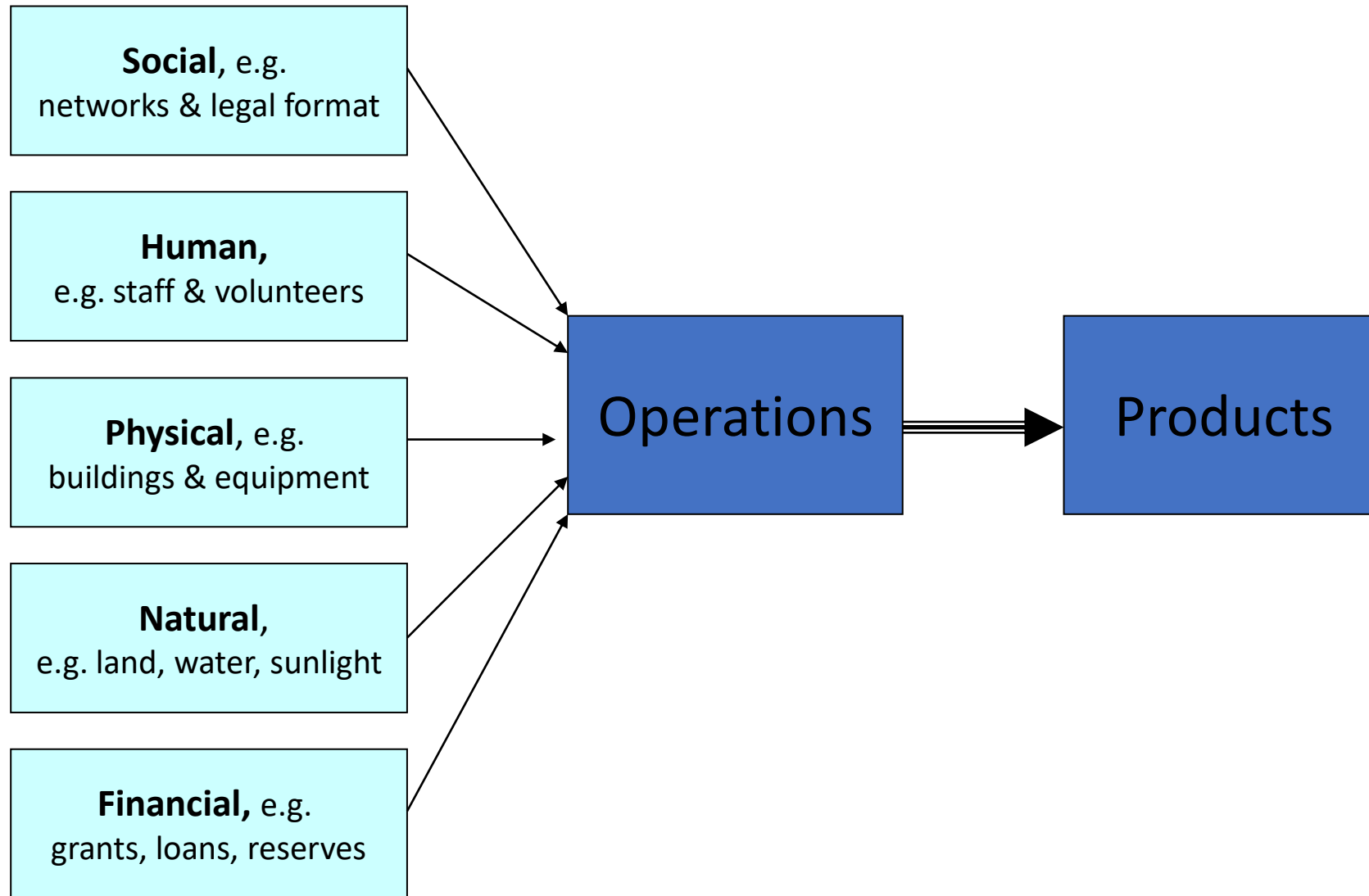




the
harvest in
numbers

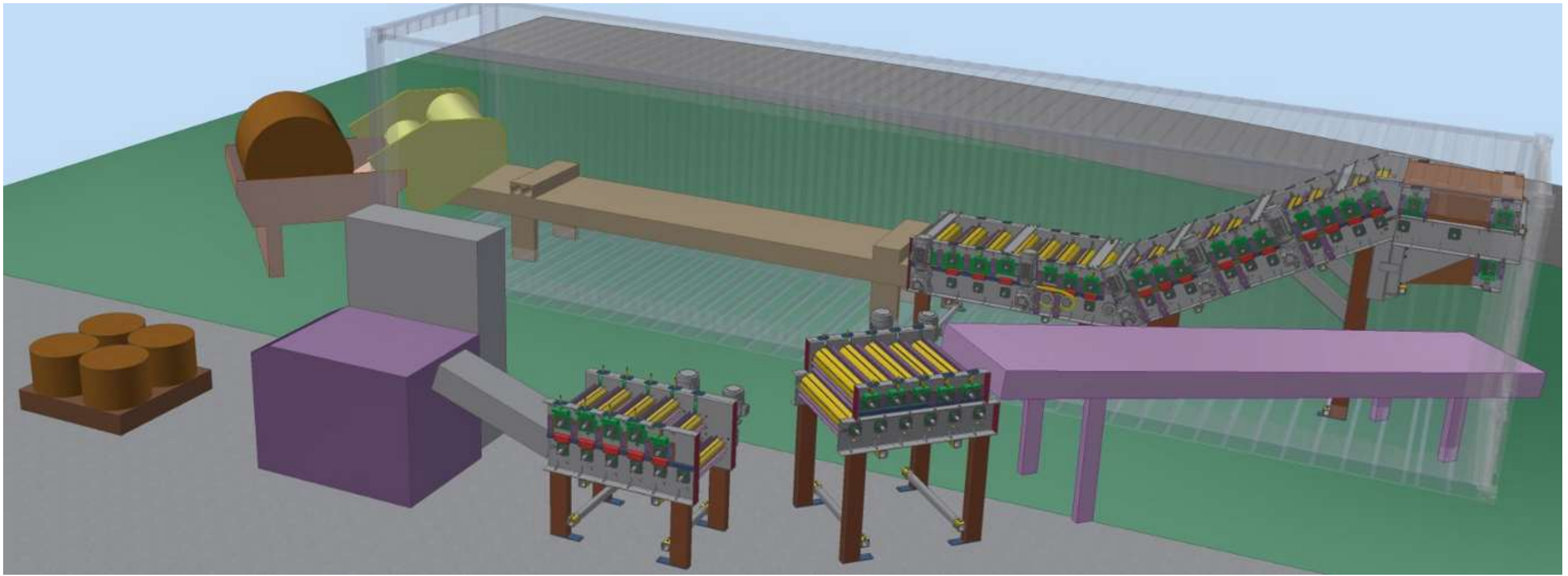
- 15 tonnes of ensiled hemp- forage harvested
- 10 small round bales of wrapped ensiled hemp
- 8 large round bales of retted hemp
- 4 tonnes of loose retted hemp
- 50 small rectangular bales
- 35 people who came to fibre day

What inputs do we need to process hemp?



INPUTS → *TRANSFORMATION* → *OUTPUTS*









FIBERTRACK 660

DECORTICATION ENGINEERED FOR TODAY'S HEMP INDUSTRY

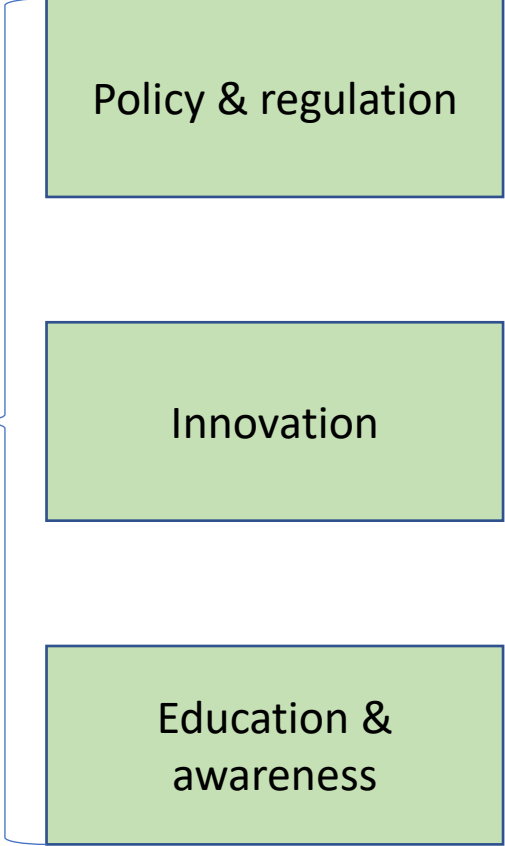
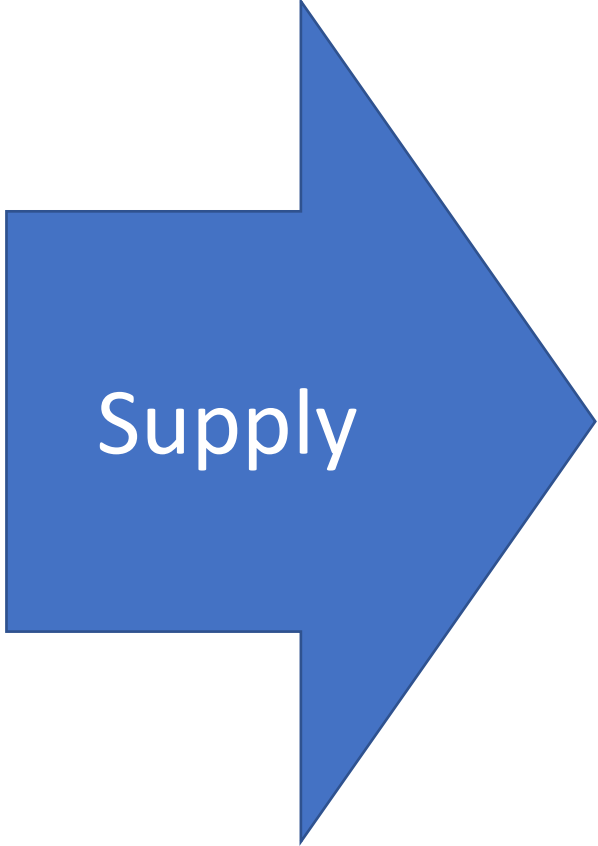
INDUSTRIAL HEMP

TATHAM



DECORTICATION SECTION

CLEANING SECTION



	The concerns we are addressing
Affordable sustainable housing	<p>The housing crisis:</p> <ul style="list-style-type: none">– Lack of affordability– Disparity between house prices and average wages– Lack of security– Lack of sustainability
Local enterprise infrastructure	<p>The crisis of livelihoods:</p> <ul style="list-style-type: none">– Fragile local economies– Job insecurity– Lack of skills & facilities to create regenerative & resilient local economies
Regenerative land management	<p>The ecological crisis:</p> <ul style="list-style-type: none">– Climate change– Biodiversity loss– Pollution, including from intensive agriculture– Resource depletion

Question:

What am I concerned about?

What is it that affects me?

What am I drawn to engage with?

At this point don't talk about your idea for an eco-social enterprise.

	The activities to be delivered by our eco-social enterprise
Affordable sustainable housing	We will work with Assemble and local community-led housing groups to develop new designs for housing, and create a new co-operative to co-ordinate suppliers, contractors and the off-site construction process.
Local enterprise infrastructure	We will develop workspace to process timber, hemp and flax into the key elements of sustainable construction materials, including panels, frames, furniture and other fittings.
Regenerative land management	We will work with partners to support the improved management of woodlands and the cultivation of “woody fibres” such as hemp and flax, linking this to a network of farmers and an on-line platform for co-ordinating the supply of sustainable materials.

Question:

What is the main activity of your eco-social enterprise?